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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Patrick S. Yoder
FLETCHER YODER
P.O. Box 692289
Houston, TX 77269-2289

EXAMINER	
NATALINI, JEFF WILLIAM	

ART UNIT	PAPER NUMBER
2858	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	**Application No.** 10/814,839	**Applicant(s)** YOUNSI ET AL.
	Examiner Jeff Natalini	**Art Unit** 2858

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6-9 and 11-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4,6-9 and 11-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, 4, 6-9, and 11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3, 7, and 8 of copending Application No. 10/905072. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

In regard to claims 1, 3, and 4, copending application 10/905072 discloses in claims 1 and 3, all of the claimed limitations including measuring a first set of values for an instantaneous differential current and an instantaneous phase voltage during an operation of the machine; calculating a second set of values for a differential phasor current and a phasor voltage based upon the first set of values of the instantaneous differential current and instantaneous phase voltage; calculating an angular relationship between the differential phasor current and phasor voltage (claim 1) calculating a dissipation factor based on the angular relationship between the differential phasor current and phasor voltage and determining insulation condition based on the

dissipation factor (claims 1 and 3), and using a phase angle between the phasor current and phasor voltage or AC insulation resistance value (claim 3). These claims are not exactly the same as the claims in application 10/905072. Application 10/905072, discloses more specific features including a rotating DC electric machine and digitizing said differential current and instantaneous voltage at a selected frequency, but these features would not provide a patentable difference between the two applications as the more specific features in 10/905072 could be removed without disrupting the purpose of the method.

In regard to claims 6-9 and 11, copending application 10/905072 discloses in claims 7, 8 and 9 (if the dissipation condition is picked in 8), including measuring a first set of values for an instantaneous differential current and an instantaneous phase voltage during an operation of the machine; calculating a second set of values for a differential phasor current and a phasor voltage based upon the first set of values of the instantaneous differential current and instantaneous phase voltage; calculating an angular relationship between the differential phasor current and phasor voltage (claim 7) calculating a one desired parameter that includes a dissipation factor based on the angular relationship between the differential phasor current and phasor voltage and determining insulation condition based on the dissipation factor (claims 7 and 9), and using a phase angle between the phasor current and phasor voltage or AC insulation resistance value (claim 9) and wherein current and phase values are measured with a differential current and voltage sensors (claim 8). These claims are not exactly the same as the claims in application 10/905072. Application 10/905072 discloses more

specific features including a rotating DC electric machine and digitizing said differential current and instantaneous voltage at a selected frequency, but these features would not provide a patentable difference between the two applications as the more specific features in 10/905072 could be removed without disrupting the purpose of the method.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 5-8, 11-21, and 23-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohler et al. (5270640) in view of Kammer et al. (6392422) and Erdman (3866117).

In regard to claims 1, 2, 6, 7, and 29, Kohler et al. discloses a insulation monitoring method (col 1 line 15-20; incipient failures (throughout application) contain among others insulation tests) for a rotating electric machine (col 1 line 49-52) comprising measuring a first set of values for an instantaneous current and an instantaneous phase voltage (abstract; voltage and current are measured at each phase of the motor) during operation of the machine (col 1 line 52-55); calculating a second set of values for a phasor current and a phasor voltage based upon the first set

of values of the instantaneous current and the instantaneous voltage (fig 10 (62 and 64)); calculating an angular relationship between the phasor current and voltage (fig 10 (66)); calculating at least one desired parameter based on the angular relationship between the phasor current and the phasor voltage (fig 10 (68) - absolute phasor angle) and determining insulating condition based on the relationship (end of abstract) and where the values for instantaneous current and instantaneous phase voltage are measured via a current sensor (fig 8 (32, 34, 36)) and a voltage sensor (fig 8 (28, 30, 32)).

Kohler et al. lacks specifically stating wherein the current measured is a differential current (wherein the other values of current calculated from this value with be a differential current), and the sensor is for sensing a differential current, and calculating a dissipation factor based on the angular relationship between differential phasor current and phasor voltage to determine the insulation condition based on the dissipation factor.

Kammer et al. teaches a device for monitoring insulation in a electrical network (abstract), in monitoring for these faults, a differential current is detected (col 1 line 61-61) and a voltage (61-62) and an angle is measured between differential current and voltage values to determine if the network has a fault (col 1 line 67 – col 2 line 1-3), the differential current is measured with a differential current sensor (col 3 line 56-62).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. to measure the differential current with a differential

sensor as taught by Kammer et al. in order to allow a more accurate monitoring of faults (col 1 line 57-58).

Erdman discloses calculating a dissipation factor (col 1 line 22-26, abstract) through the measure of a phase angles between the phasor current (fig 7a) and phasor voltage (fig 7a), and determining an insulation condition based on the dissipation factor (col 1 line 11-14).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. to determine the dissipation factor based on the angular relationship between the phasor current and phasor voltage for determining insulation condition as taught by Erdman in order to be able to determine the dielectric constant, thickness, and integrity of the insulation (col 1 line 11-14).

In regard to claims 3 and 8, Kohler et al. discloses wherein the desired parameter is (angular relationship includes) a phase angle between the phasor voltage and phasor current (fig 10 (68)).

In regard to claim 11, Kohler et al. discloses where the output from the current sensor is digitized (fig 9 (44)) and filtered (col 5 line 45-46).

In regard to claims 12 and 18, Kohler et al. discloses a rotating electric machine (col 49-51) comprising: stator and rotor windings configured to conduct electric current and generate magnetic field by virtue of flow of the current, plurality of conductors to conduct electric current to the windings (this is common in a motor system and seen in

fig 8); an insulation system for insulating the windings (col 1 line 52-54); the values for instantaneous current and instantaneous phase voltage of at least one winding (abstract) are measured via a current sensor (fig 8 (32, 34, 36)) and a voltage sensor (fig 8 (28, 30, 32)); and a processing module coupled to the current sensor and voltage sensor (CPU coupled by channels in fig 8 and 9), the processing module being configured to convert the values for instantaneous current and instantaneous phase voltage to respective values for phasor current and phasor voltage, and wherein the processing module is further configured to calculate an angular relationship between the phasor current and phasor voltage and generating an output based on the relationship (CPU fig 9 (48) controls fig 10; col 5 line 27-46) as an indication of insulation condition (abstract and col 6 line 13-19).

Kohler et al. lacks specifically stating wherein the current measured is a differential current, and the sensor is for sensing a differential current and calculating a dissipation factor based on the angular relationship between differential phasor current and phasor voltage to determine the insulation condition based on the dissipation factor.

Kammer et al. teaches a device for monitoring insulation in a electrical network (abstract), in monitoring for these faults, a differential current is detected (col 1 line 61-61) as is a voltage (61-62) and an angle is measured between the values to determine if the network has a network has a fault (col 1 line 67 – col 2 line 1-3), the differential current is measured with a differential current sensor (col 3 line 56-62).

Erdman discloses calculating a dissipation factor (col 1 line 22-26, abstract) through the measure of a phase angles between the phasor current (fig 7a) and phasor

voltage (fig 7a), and determining an insulation condition based on the dissipation factor (col 1 line 11-14).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. to determine the dissipation factor based on the angular relationship between the phasor current and phasor voltage for determining insulation condition as taught by Erdman in order to be able to determine the dielectric constant, thickness, and integrity of the insulation (col 1 line 11-14).

In regard to claims 13 and 19, Kohler et al. discloses a system for filtering (col 5 line 45-46) and digitizing (fig 9 (44)) the output from the sensors.

In regard to claims 14 and 20, Kohler et al. contains memory means for values obtained (fig 9 (46 and 52)).

Kohler et al. lacks specifically stating that the output generated by the processing module is stored in memory.

It would have been obvious to one with ordinary skill in the art at the time the invention was made that Kohler would store the output of the CPU in order for the user to be able to pull information regarding how many faults occur in a certain time period (col 6 line 41-47).

In regard to claims 15-17, 21, 27, and 28, Kohler et al. discloses an indicator module coupled to the processing module (indicator is part of the CPU), the indicator

indicates the insulation condition based on the output from the processing module, that is compared to a predetermined threshold, and if the value exceeds the predetermined threshold the indicator generates an alert (col 6 line 13-19).

In regard to claim 18, Kohler et al. discloses wherein the machine is a three phase rotating machine (abstract).

In regard to claims 24 and 25, insulation condition is monitored for individual circuits per phase and at each coil (abstract; monitored at each input of motor).

In regard to claim 26, wherein insulation condition is monitored for the entire machine (col 1 line 6-9).

In regard to claim 30, Kohler et al. discloses a computer program (col 5 line 27-42; CPU controls all processes with programming contained in ROM or RAM) for monitoring insulation (col 1 line 15-20) of a rotating electric machine (col 1 line 49-52) comprising a routine for calculating a second set of values for a phasor current and a phasor voltage based upon the first set of values of an instantaneous differential current and an instantaneous voltage (fig 10 (62 and 64)); calculating an angular relationship between the phasor current and voltage (fig 10 (66)); and determining insulating condition based on the relationship (end of abstract).

Kohler et al. lacks specifically stating wherein the current measured is a differential current, and the sensor is for sensing a differential current and calculating a dissipation factor based on the angular relationship between differential phasor current and phasor voltage to determine the insulation condition based on the dissipation factor.

Kammer et al. teaches a device for monitoring insulation in a electrical network (abstract), in monitoring for these faults, a differential current is detected (col 1 line 61-61) as is a voltage (61-62) and an angle is measured between the values to determine if the network has a fault (col 1 line 67 – col 2 line 1-3), the differential current is measured with a differential current sensor (col 3 line 56-62).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. to measure the differential current with a differential sensor as taught by Kammer et al. in order to allow a more accurate monitoring of faults (col 1 line 57-58).

Erdman discloses calculating a dissipation factor (col 1 line 22-26, abstract) through the measure of a phase angles between the phasor current (fig 7a) and phasor voltage (fig 7a), and determining an insulation condition based on the dissipation factor (col 1 line 11-14).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. to determine the dissipation factor based on the angular relationship between the phasor current and phasor voltage for determining insulation condition as taught by Erdman in order to be able to determine the dielectric constant, thickness, and integrity of the insulation (col 1 line 11-14).

4. Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohler et al. (5270640), Kammer et al. (6392422) and Erdman (3866117) as applied to claims 1 and 6 above, and in further view of Kildishev et al. (3746979).

Kohler et al. as modified lacks specifically wherein an AC insulation resistance value is determined to determine an insulation condition.

Kildishev et el. discloses measuring the AC insulation resistance of a electrical rotation machine (abstract).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. as modified to determine an AC insulation resistance value as taught by Kildishev in order to protect the machine against an insulation break down (col 2 line 35-36).

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kohler et al. (5270640) and Kammer et al. (6392422) and Erdman (3866117), as applied to claim 18 above, and further in view of Ward (5194817).

Kohler et al. as modified lacks specifically stating that the machine could be a single phase rotating machine.

Ward discloses testing for insulation faults (abstract) in a single phase rotating machine (figs 3 and 5; col 6 42-48).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Kohler et al. as modified to test insulation on a single phase rotating machine as taught by Ward in order to asses the condition of winding insulating materials and monitor trends with time (col 1 line 29-33).

Response to Arguments

6. Applicant's arguments with respect to claims 1, 3, 4, 6-9, and 11-30 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gingue et al. (5670748) teaches that dissipation factor refers to the energy lost when voltage is applied across an insulation material, and is the cotangent of the phase angle between voltage and current in a reactive component, and the dissipation factor is sensitive to a contamination of the insulation.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini

JN

Anjan Deb

ANJAN DEB
PRIMARY EXAMINER